THE CLAIMS

1. A stopper or closure for a fluid product retaining container constructed for being inserted and securely retained in a portal forming neck of the container, said stopper/closure comprising:

A. an elongated, solid, cylindrically shaped member dimensioned for insertion in the portal of the neck of the fluid product retaining container for closing and sealing the fluid product in the container;

B. said member being formed from extruded foamed plastic material comprising a density ranging between about 100 kg/m^3 to 500 kg/m^3 and constructed for sealing the fluid product retained in the container and preventing transfer of the fluid product from the container prior to removal; and

C. said foamed plastic material incorporating different hues or color, imparting an integrally formed streaking effect to said synthetic closure;

whereby a synthetic closure is attained which is capable of completely sealing any desired fluid product in a container, retaining the product in the container for any desired length of time without any degradation of the fluid product or

degradation of the closure, while providing a visual appearance substantially identical to stopper formed natural material.

2. The synthetic closure/stopper defined in Claim 1, wherein the cylindrically shaped member is further defined as comprising substantially flat terminating surfaces forming the opposed ends of said cylindrically shaped member.

3. The synthetic closure/stopper defined in Claim 1, wherein the plastic material forming the core member is further defined as comprising medium density or low density, closed cell, foamed plastic comprising one or more selected from the group consisting of plastic polymers, inert polymers, homopolymers, copolymers, terpolymers, thermoplastic elastomers, and thermoplastic olefins.

4. The synthetic closure/stopper defined in Claim 3, wherein said closed cell foam plastic material is further defined as comprising at least one selected from the group consisting of polyethylenes, metallocene catalyst polyethylenes, polybutanes, polybutylenes, polyurethanes, silicones, vinyl-based resins, polyesters, ethylenic acrylic copolymers, ethylene-vinyl-acetate copolymers, ethylene-methyl-acrylate copolymers, ethylene-butyl-acrylate copolymers, ethylene-propylene-rubber, styrene butadiene rubber, ethylene-ethyl-acrylic copolymers, ionomers, polypropylenes, and copolymers of polypropylene, copolymerizable ethylenically unsaturated comonomers, and thermoplastic amides.

5. The synthetic closure/stopper defined in Claim 3, wherein said closed cell, foamed plastic material is further defined as comprising one or more polyethylenes selected from the group consisting of high density, medium density, low density, linear low density, ultra high density, and medium low density.

6. The synthetic closure/stopper defined in Claim 5, wherein said member further comprises a density ranging between about 200 kg/m^3 to 350 kg/m^3.

7. The synthetic closure/stopper defined in Claim 1, wherein said member is further defined as comprising

a. between about 10% and 60% by weight based upon the weight of the entire member of at least one homopolymer,

b. between about 10% and 60% by weight based upon the weight of the entire member of at least one thermoplastic elastomer, and

c. between about 10% and 60% by weight based upon the weight of the entire member of at least one ionically cross-linked resin.

8. The synthetic closure/stopper defined in Claim 7, wherein said core member is further defined as comprising cell size ranging between about 0.02mm and 0.5mm and a cell density ranging between about 8,000,000 $cells/cm^3$ to 25,000,000 $cells/cm^3$.

9. The synthetic closure/stopper defined in Claim 1 wherein said member is further defined as being formed by extrusion.

10. The synthetic closure/stopper defined in Claim 9, wherein said extrusion process is further defined as incorporating one or more blowing agents selected from the group consisting of carbon dioxide, nitrogen, carbon, water, air nitrogen, helium, and argon, Azodicarbonamic Azodiisobutyro-Nitride, Benzenesulfonhydrazide, 4,4-Oxybenzene Sulfonylsemicarbazide, p-Toluene Sulfonylsemi-carbazide, Barium Azodicarboxlyate, N,N'-Dimethyl-N,N'-Dinitrosoterephthalamide, Trihydrazinotriazine, Aliphatic Hydrocarbons having 1-9 carbon atoms, Halogenated Aliphatic Hydrocarbons having 1-9 carbon atoms, Aliphatic Hydrocarbons having 1-9 carbon atoms, Aliphatic alcohols having 1-3 carbon atoms and partially Hydrogenated Chlorocarbon and Chloro-fluorocarbons.

11. The synthetic closure/stopper defined in Claim 10, wherein said blowing agent is further defined as comprising between about .005% and 10% by weight of the weight of the plastic material and comprises an inert blowing agent selected from the group consisting of nitrogen, carbon dioxide, water, air, nitrogen, helium, and argon.

12. The synthetic closure/stopper defined in Claim 9, wherein a nucleating agent is employed in the extrusion process and said nucleating agent is selected from the group consisting of calcium silicate, talc, clay, titanium oxide, silica, barium sulfate, diamatious earth, and mixtures of citric acid and sodium bicarbonate.

13. The synthetic closure/stopper defined in Claim 12, wherein said nucleating agent is further defined as comprising between about 1% and 10% by weight based upon the weight of the entire composition.

14. The synthetic closure/stopper defined in Claim 1, wherein the outer surface of the member is further defined as comprising indicia formed thereon.

15. The synthetic closure/stopper defined in Claim 14, wherein said indicia comprises one or more selected from the group consisting of letters, symbols, colors, graphics, and wood tones.

16. The synthetic closure/stopper defined in Claim 1, wherein said foamed plastic material comprises at least a first component having first hue and a second component having a second, different hue, and each of said components having different viscosities and different melt flow indicies.

17. The synthetic closure/stopper defined in Claim 16, wherein the melt flow index of the first component ranges between about 6 and 10, and the melt flow index of the second component ranges between about 16 and 20.

18. A method for mass producing synthetic closures for use in sealing fluid products in a container having a portal formed in the neck of the container, said closure comprising at least two different hues integrally formed therein, said method comprising the steps of:

A. adding the desired plastic material for forming the synthetic closure into an extruder, said plastic material comprising at least two components having different hues,

B. melting the plastic material at elevated temperatures and pressures into a polymer melt;

C. aggressively mixing the blowing agent into the polymer melt to assure thorough dispersion therein and plasticization thereof;

D. passing said plasticized polymer melt through an extrusion die for forming an elongated continuous, foamed, substantially cylindrical rod having the desired diameter for use as a synthetic closure; and

E. controlling the passage of said components having different hues through the die to produce elongated, substantially continuous streaks of one hue extending through the second hue;

whereby a synthetic closure is mass produced having a visual appearance which closely emulates closures formed from natural products.

19. The method defined in Claim 18, comprising the additional step of:

G. arcuately pivoting the elongated continuous foamed rod along the central axis thereof for forming elongated continuous sinusoidal streaks in said rod.

20. A method for mass producing synthetic closures for use in sealing fluid products in a container having a portal formed in the neck of the container, said method comprising the steps of:

A. forming a foamed plastic polymer in an extruder by passing the polymer through an extrusion die, and

B. expelling the exiting foamed plastic polymer from said die into a plurality of mating casting members for forming a plurality of inter-connected foamed products in a continuous extrusion process;

whereby products having any desired size and shape are capable of being extruded in a continuous operation.

21. The method defined in Claim 20, wherein said mating casting members define a product forming zone when in interengaged relationship with each other, thereby receiving the exiting foamed plastic polymer and forming said foamed plastic polymer in the precisely desired configuration for the final product.

22. The method defined in Claim 21, wherein said plurality of mating casting members are further defined as comprising at least two casting members cooperatively associated with the extrusion die and constructed for being moved into and out of alignment therewith, for receiving the exiting foamed plastic polymer and forming the desired product.

23. The method defined in Claim 21, wherein said plurality of mating casting members are further defined as comprising two separate, cooperatively associated, adjacent elongated lines of interconnected casting members, with each casting member of each line being constructed for mating cooperative interengagement with one, juxtaposed, spaced, cooperating casting member of the adjacent line, with said lines of interconnected casting members being positioned for receiving the foamed plastic polymer exiting the extrusion die, forming the desired product by mating interengagement and maintaining said formed product in said mated casting members until said product is completely formed.

24. The method defined and Claim 23, wherein each of said elongated lines of interconnected casting members are constructed for being in continuous motion with each member of each line of casting members continuously moving in a closed loop.

25. The method defined in Claim 24, wherein each of said elongated lines of interconnected casting members is further defined as being constructed for continuous rotational movement at identical speeds and positioned in juxtaposed, spaced, cooperating relationship for enabling a plurality of members of each of said lines to remain interengaged with each other during said rotational movement.

26. A method for mass producing synthetic closures for use in sealing fluid products in a container having a portal formed in the neck of the container, said method comprising the steps of

A. adding the desired plastic material for forming the synthetic closure into an extruder;

B. melting the plastic material at elevated temperatures and pressures into a polymer melt;

C. injecting carbon dioxide as a blowing agent into the polymer melt in its supercritical phase;

D. aggressively mixing the carbon dioxide blowing agent into the polymer melt to assure thorough dispersion therein and plasticization thereof; and

E. passing said plasticized polymer melt through an extrusion die for forming an elongated continuous, foamed, substantially cylindrical rod having the desired diameter for use as a synthetic closure;

whereby a highly effective synthetic closure is mass produced having all requisite attributes.

27. The method defined in Claim 26, wherein production of said closure utilizes a screw or screws which provide for plastification of the polymer without imparting excess shear/heat to the formulation, while providing the requisite mixing, both distributive and dispersive, and the required pumping and cooling of polymer mixture, while generating pressures needed to solubilize the carbon dioxide blowing agent in the polymer and maintaining the carbon dioxide in its supercritical phase.

28. The process for the production of the synthetic closure defined in Claim 27, wherein the carbon dioxide is delivered to the extruder by employing dual cylinder syringe pumps, mass flow meter and computer feedback loop for volume/pressure control, back pressure regulator, and cooling systems for all pumping components.

29. The method defined in Claim 28, wherein the carbon dioxide is injected into the polymer melt using an insulated injector, thereby achieving cell density, size, and structure required for the final product.